REMARKS

Reconsideration of this Application is respectfully requested. In response to the Office Action mailed November 2, 2006, Applicants have amended claims 1, 4 and 33 and add new claim 34. Claim 4 is amended to include previously pending, but now cancelled, claim 9. The amendments are believed to overcome the Examiner's rejections and to now even more clearly claim Applicant's invention. These amendments are believed to be fully supported and are believed to contain no new matter. Claims 1-7 and 10-34 are pending upon entry of the amendment.

Based on the above Amendment and the following Remarks, Applicants respectfully request that the Examiner reconsider and withdraw all outstanding objections and rejections.

Rejections under 35 U.S.C. § 112, 2nd ¶

On page 3, the Action rejects claim 33 as being indefinite. The Examiner states that claim 33 omits a structural connection. Applicants traverse the rejection, and amend the claim to further prosecution. Applicants now believe that the rejection is moot in light of the claim amendment which is consistent with FIG. 11 of Applicants' application.

Applicants request that the Examiner withdraw the rejection under 112, 2nd paragraph.

Rejections under 35 U.S.C. § 102 (b)

On page 3, the Action rejects claims 1-7, 9-19, 21-22, and 26-32 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,887,491 to Monson et al. (hereinafter "Monson"). Applicants respectfully traverse this rejection.

For at least the following reasons, Applicants respectfully note that Thompson fails to anticipate at least amended independent claims 1 or 4.

Amended claim 1, for example, recites:

> A mobile enhanced scanning solutions module comprising:
> a plurality of measurement subsystems comprising:
> a flow control subsystem,
> a detector subsystem coupled to said flow control subsystem,
> a moisture separator subsystem coupled to said flow control subsystem, and
> a sampling subsystem coupled to said flow control subsystem;

> a global positioning system (GPS) receiver integrated with a mobile data acquisition system configurable to allow geo-referencing of data acquired from at least one of said detector subsystem and/or said sampling subsystem; and
>
> a software control subsystem coupled to said plurality of measurement subsystems,
>
> wherein said software control subsystem is operative to ***intelligently adapt, on-the-fly, to at least one of configure and/or reconfigure said plurality of measurement subsystems*** prior to exhaust ***in response to at least one of sensed conditions, operator selection, and/or preprogrammed conditions***.

(Emphasis added). Similarly, amended claim 4 recites:

> A mobile enhanced scanning solutions module comprising:
>
> a plurality of measurement subsystems comprising:
>
> a detector subsystem configured to be selectively coupled to an in situ gas stream, and
>
> a sampling subsystem selectively coupled to the in situ gas stream;
>
> a global positioning system (GPS) receiver integrated with a mobile data acquisition system configurable to allow geo-referencing of data acquired from at least one of said detector subsystem and/or said sampling subsystem;
>
> a software control subsystem coupled to said plurality of measurement subsystems; wherein the enhanced scanning solutions module is operative to ***intelligently adapt on-the-fly to at least one of configure and/or reconfigure said plurality of measurement subsystems*** prior to exhaust***, in response to at least one of sensed conditions, operator selection, and/or preprogrammed conditions***.

(Emphasis added). Applicants' claimed invention is directed to a mobile data acquisition system, which unlike Monson, intelligently adapts on-the-fly to configure or reconfigure a plurality of measurement subsystems in response to sensed conditions, operator selection or preprogrammed conditions. Monson fails to teach or suggest adapting on-the-fly the configuration of measurement subsystems in response to the occurrence of at least sensed conditions. For an exemplary embodiment, see FIG. 11 of Applicants' invention, for example. Applicants' claimed invention may be used to acquire and analyze sensor data of environmental subsurface conditions from sensors that are driven deep into the subsurface detecting contaminant vapor levels in the soil and groundwater using an intelligently on-the-fly adaptable based on sensed conditions configurable and reconfigurable measurement subsystems based on sensed environmental subsurface data (see claim 34, for example).

Monson teaches a shallow (24 inches deep, see col. 2, line 59), soil data collection system for determining soil characteristics by collecting and storing "data relative to field location" (col. 3, line 17) from "test assemblies for possible subsequent analysis and evaluation" (col. 3, line 5). Data is collected using a plurality of plexiglass windows (reference labels 42a-c, see col. 5, line 30) using an infrared light source and a spectroscope and is stored. Monson teaches a controller which "initiates operation" of the testing assemblies. See Fig. 5, and col. 5, line 46, Fig. 6, and col. 6, line 6, and Fig. 10, and col. 7, line 67. Monson fails to teach or suggest a feature of previously pending claim 9 now incorporated into both claims 1 and 4, the ability to adapt on-the-fly to reconfigure a plurality of measurement subsystems in response to sensed conditions, etc.. Monson, stead only collects data and stores the data. The controller of Monson initiates operation of various testing assemblies. However Monson does not teach or suggest intelligently analyzing, adapting on-the-fly, and reconfiguring by a software control subsystem a plurality of measurement subsystems, in response to sensed conditions. Monson stops at storage and fails to contemplate intelligent analysis and adaptation on-the-fly of configurations of a plurality of measure subsystems.

Therefore, amended claims 1 and 4 are believed to be in condition for allowance and allowance thereof is respectfully requested.

Claims 2-7, and 10-34, which depend from either of allowable claims 1 or 4, are therefore also believed to be in condition for allowance because of their dependence on allowable claims.

Further, Monson fails to teach or suggest all of the elements of claim 34. Applicants' new claim 34 sets forth:

> The enhanced scanning solutions module of claim 1, wherein said software control subsystem is operative to intelligently analyze and adapt on-the-fly to configure and/or reconfigure said plurality of measurement subsystems, in response to at least sensed environmental conditions including sensed environmental subsurface data, ***wherein said environmental subsurface comprises an area beneath at least one of a surface of earth, and/or a surface of a body of water, and wherein a membrane interface probe (MIP) sensor is driven into said environmental subsurface and said MIP sensor is in direct contact with soil as well as at least one of ground water, and/or contaminant vapor.***

(Emphasis added). Monson fails to teach or suggest a system including a membrane interface. Monson also fails to provide a system adapted for use at depths including ground water in the soil water matrix. Monson only contemplates testing to a depth of 24 inches, i.e., at the soil level, and

fails to contemplate use of a membrane interface sensor which allows testing of groundwater and contaminant vapor mixed with groundwater and soil at much deeper depths creating much higher hydrostatic pressures. Thus, Monson's system would not work at the considerably deeper levels contemplated by embodiments of Applicants' claimed invention, and within the groundwater that Applicants' claimed invention contemplates analyzing.

Rejections under 35 U.S.C. § 103 (a)

Beginning on page 6-9, the Action rejects claims 20 and 25, 24 and 33, and 23 as being unpatentable under 35 U.S.C. § 103(a) over Monson in view of U.S. Patent No. 6,405,135 to Adriany (hereinafter "Adriany"), over Monson in view of U.S. Patent No. 6,487,920 to Robbatt (hereinafter "Robbatt"), and over Monson in view of U.S. Patent 3,491,595 to Griffeth (hereinafter "Griffeth"), respectively. Applicants respectfully traverse the rejections. Monson and Adriany, Robbatt, and/or Griffeth, alone or in combination, fail to teach or suggest all the elements of claims 1, 4 and the dependent claims which depend therefrom.

Applicants respectfully note that for at least the reasons mentioned above with reference to claims 1 and 4, these dependent claims are also patentable over the applied references.

The Examiner on page 6, rejects claims 20 and 25 over Monson in view of Adriany. The Examiner concedes that Monson fails to disclose a waterproof connector or O-ring seal. Applicants agree. The Examiner continues remarking that combining Monson with Adriany overcomes these shortcomings. Applicants respectfully disagree.

Applicants respectfully note that Adriany is understood to be a stationary system and is not designed for sensing while being driven through the subsurface, it is rather a stationary monitoring and alarm system. Adriany teaches an embedded (underground) Internet sensor system for protecting real property from the consequences of subterranean chemical pollution. The system provides a permanent, in ground, real time monitoring alarm system for identifying an occurrence of contaminants in the subsurface of a property. An onsite processor controls a local network of sensors and a communication device relays the data to a remotely located database. The local network of sensors are made up of multiple acoustic wave sensors differentiated by sensor coatings configured into a sensor array. As a vapor contaminant passes across the surface of the surface

acoustic wave sensor crystals, a shift is caused in the frequency of the acoustic wave. The shift is translated into an electronic signal that is communicated to the onsite processor, which in turn communicates the signal in the form of electronic data to a remote facility wherein remedial measures may be dispatched and appropriate parties notified. The method of dispatch and notification is provided by a Web site system accessible through the Internet. The system is provided as part of a pollution detection and notification service for which a customer pays a subscription fee.

Adriany does not teach or suggest a system including a scanning solutions module which may be adapted on-the-fly to be configured and/or re-configured to use a plurality of measurement subsystems in response to sensed conditions as required by amended claims 1 and 4. Instead, Adriany is a shallow soil depth alarm system, it merely sits and monitors and sets off an alarm in the event of detected pollution. Adriany has no flow control, no software control, it only monitors for detection of pollution. Adriany is not reconfigurable, let alone, adaptable on-the-fly to reconfigure sensors in response to sensed conditions, instead, Adriany simply waits and monitors and then sets off an alarm. Adriany's monitor system is fixed, not driveable. Unlike Adriany, Applicants' invention provides for a mobile data acquisition system which analyzes data acquired and sensed and adapts on-the-fly to reconfigure a plurality of measurement subsystems in response to sensed conditions. Adriany contemplates a fixed leak detection system, not a mobile, measurement system as set forth in Applicants' claimed invention.

Adriany's O-ring is used to seal an access door to a cavity, not to make watertight a driven membrane interface sensor as contemplated in embodiments of Applicants' invention, since Adriany's sensor is not driven, but is rather placed in a stationary position in the shallow surface at or above the water table. Regarding claim 20, the Examiner asserts that the applied combination teaches or suggests a watertight housing and couplings. Monson and Adriany, alone or combination, fail to teach or suggest a membrane interface sensor. Conventional membrane interface probes are not watertight, indeed Applicant purchases many MIPs and they all rust from the lack of watertightness, requiring replacement of an entire probe. There are no field-serviceable or modular parts for MIPs and thus entire probes must instead be replaced upon mechanical or

electrical failure. As noted, there is a longfelt need for probes of this sort, an important indicia of non-obviousness. Thus claims 20, 21-25 are also patentable for at least these reasons.

The Examiner on page 7, rejects claims 24 and 33 over Monson in view of Robbatt. The Examiner concedes that Monson fails to disclose a field-insertable and removable cartridge heating element or feedback. The Examiner further concedes that Robbatt fails to teach a separable cartridge heating element. Applicants agree. The Examiner continues remarking that combining Monson with Robbatt in view of what is obvious to a person of ordinary skill overcomes these shortcomings and the failure to teach separability or removal and/or replacement of the cartridge. Applicants respectfully disagree. Applicants respectfully note that Robbatt fails to teach or suggest a removable heating element, and actually *teaches away* from use of a separate heating element stating "Experiments involving the use of a ***separate, wrapped heating element***, however, have resulted in uneven heating of the collection line unless a tight wrapping pattern is used, which increases the transfer line's material cost and weight, while reducing its flexibility. Thus, at present, these embodiments ***are not preferred***." (See Robbatt). Thus, it would not have been obvious to provide a separate heating element, since Robbatt teaches away from this. Also, Applicants further note that Monson and Robbatt, alone or in combination still fail to teach or suggest a membrane interface of several of the dependent claims. Further, Applicants' Assignee company Columbia Technologies has used conventional membrane interface probes manufactured by Geoprobe and have a longfelt and unmet need to be able to replace malfunctioning probe components, such as the heating element, other than only the membrane interface, or the entire probe.

Finally, the Examiner on page 8, rejects claim 23 over Monson in view of Griffeth. The Examiner concedes that Monson fails to disclose a removable conductivity nose assembly. The Examiner further concedes that Griffeth fails to teach a separable conductivity nose assembly. Applicants agree. The Examiner continues to say it would be obvious to a person of ordinary skill to provide these modifications to allegedly obtain the claimed invention. Applicants disagree. Griffeth teaches a "cane shaped" instrument which can be inserted into the ground. Again, Griffeth and Monson contemplate a shallow, soil analysis system, not a driveable assembly for use in sensing deeper at ground water levels (see claim 34, for example). There is no teaching or suggestion whatsoever that the nose cone portion of Griffeth be modified to be removable,

replaceable, or even made separate from the cane. Further, Applicants' Assignee company Columbia Technologies has used conventional membrane interface probes manufactured by Geoprobe and have a longfelt and unmet need to be able to replace malfunctioning probe components, such as the conductivity nose, other than only the membrane interface, or the entire probe.

Thus as noted above with reference to amended claims 1 and 4, these, and the remaining claims which depend therefrom are patentable over the applied references, Monson, Adriany, Robbatt and/or Griffeth, alone or in combination, which do not teach or suggest intelligent analysis and on-the-fly adaptation to reconfigure measurement systems based on sensed conditions.

Applicant further asserts that claims 12, 16, 17, 18, and 19 are patentable over the applied references, alone or in combination. Applicant notes that it would not have been obvious to include a plurality of membrane interfaces in a driven membrane interface probe, or to add these elements to the applied references. Further, the use of larger diameter probes would not be obvious as they would increase the cost of the probe, but advantageously, a larger diameter probe would allow for additional membrane interfaces to be added as compared to conventional membrane interface probes. Applicants have designed a probe for improved circumferential testing, while ensuring sufficient probe tensile strength to allow driving the multiple membrane interface probe. Thus, Applicants respectfully note that it would not have been obvious to use multiple membrane interfaces in a driven probe. There is a longfelt need, an important indicia of non-obviousness, by the Assignee of Applicants' invention for driven probes having increased sensor coverage, or larger diameter probes. Regarding claim 12, the Examiner notes that it would be obvious to make a probe smaller to more easily travel deeper into the ground. Although this might be conventional wisdom, Applicant respectfully notes, that this conclusion may not necessarily follow, because of an implicit loss of tensile strength caused by a decreased diameter. Indeed, the opposite may be true. Applicants respectfully assert that it would not have been obvious to increase the diameter of the probe and to add internal devices in a cavity, as well as to add multiple membrane interfaces circumferentially about the perimeter of a probe, according to exemplary embodiments of the claimed invention. Thus claims 12, 16, 17, 18 and 19 are patentable for at least these reasons.

Accordingly, Applicant respectfully notes that for at least the above reasons that all the pending claims are believed to be in condition for allowance and allowance thereof is respectfully requested.

Conclusion

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is hereby invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment is respectfully requested.

Respectfully submitted,

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